

METHODS AND APPARATUS FOR FORMING A CONNECTION BETWEEN
A CIRCUIT BOARD AND A CONNECTOR

ABSTRACT OF THE DISCLOSURE

5 The invention is directed to techniques for forming a connection between a circuit board and a connector using a signal launch having multiple sets of ground vias. One set of ground vias enables the connector to mount securely to the circuit board in a traditional manner (e.g., using screws and nuts), while another set of ground vias provides electrical pathways that more closely match that of a coaxial cable which can
10 connect the connector to a measuring device (e.g., a TDR). Such pathways decrease signal distortion (e.g., by reducing inductance loops) through the connector thus improving the accuracy of signal measurements from the circuit board. One arrangement of the invention is directed to a connection system having a circuit board that includes (i) a section of circuit board material having a signal conductor, a ground
15 conductor, and dielectric material that physically separates the signal conductor and the ground conductor, and (ii) a signal launch. The signal launch includes a signal via that physically contacts the signal conductor and the dielectric material of the section of circuit board material, a first set of ground vias and a second set of ground vias. Each
20 set of ground vias physically contacts the ground conductor and the dielectric material of the section of circuit board material. Each of the first set of ground vias is disposed a first radial distance from the signal via. Each of the second set of ground vias is disposed a second radial distance from the signal via. The first and second radial distances are different. The connection system further includes a coaxial connector that
25 mounts to the signal launch of the circuit board in order to provide electrical access to the signal and ground conductors of the circuit board. The different sets of ground vias provides flexibility enabling one set to operate as a mounting location (e.g., for soldering or bolting the connector to the signal launch), and the other set to provide improved transmission line characteristics (smaller inductance loops, etc.) in order to reduce signal distortion.